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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,341	11/18/2003	Takanori Nishio	16869K-040510US	8188

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EXAMINER

ROJAS, MIDYS

ART UNIT	PAPER NUMBER
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2185

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/717,341	NISHIO ET AL.	
	Examiner	Art Unit	
	Midys Rojas	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-12 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-12 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>20070329</u> . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed on 03/20/07 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shoroff et al. (6,023,744) in view of Blumenau (6,631,442) in view of Kagami et al. (6,839,815) and further in view of Igami et al. (6,622,223).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10, 11, 12, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoroff et al. (6,023,744) in view of Blumenau (6,631,442) in view of Kagami et al. (6,839,815) and further in view of Igami et al. (6,622,223).

Regarding Claim 10, Shoroff discloses a method of operating a storage system wherein when a storage system detects that an amount free space of the storage system has become less than a predetermined value, wherein the predetermined value is prearranged to be that of the size of the processed data; a local storage area provided by the storage system is made available as said storage area (Column 10, lines 45-54) thus extending its available storage area. This system determines if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45).

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Shoroff does not teach performing a mount operation on one or more disk units so that a remote storage area may serve to extend the available storage area. Shoroff also doesn't teach using the size and speed (reading or writing) of said remote storage area to select the remote storage area to be used.

Blumenau discloses the mounting of a remote volume for the purpose of making it available for use by a local storage system (See Column 2, lines 44-66). Blumenau additionally teaches retrieving a required volume's size (see Figure 3, step 303) and architecture specific access information (such as access speed, operating system, memory architecture) for use while configuring the remote volume's association (see Column 9, lines 45 – Column 10, lines 6; Column 10, lines 20- 44; Column 10, lines 57-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage system of Shoroff to include to mounting operation of Blumenau as well as the use of size and access information parameters for the selection of the remote storage volume to be used for memory extension. In allowing the system of Shoroff to seek additional storage space from remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. In allowing the system of Shoroff to implement the use of size and access information parameters for the selection of the remote storage volume to be used for memory extension, the system can guarantee that the remote storage volume provided for expansion has enough space available to satisfy the storage needs of the local system and that the remote storage volume can be accessed at the same speed as local volumes (thus preventing the need to slower accessing times).

Shoroff in view of Blumenau does not teach specifying the size and speed of the storage area to be used in a utilization demand message from said storage system to said remote storage system that identifies a predetermined port ID of the storage system, and wherein said remote storage system determines if it is possible to provide said remote storage area can be provided in accordance with said size and speed, and if it is possible, sends a data packet from the remote storage system to the storage system, said data packet identifying a remote unit ID of the remote storage area that is to be stored in a port management table of the storage system in accordance with the port ID identified in the utilization demand message.

Kagami et al. discloses specifying the size and speed of the storage area to be used in a utilization demand message from said storage system to said remote storage system that identifies a predetermined port ID of the storage system (the SOD center receives the demand from the host computer, decides which storage subsystem to use to satisfy the demand, and send the demand to the storage subsystem, Col. 2, lines 15-30. The selection of the storage subsystem to use for meeting the demand is made from the view point of performance, Col. 12, lines 45-57. In this system the host represents the local storage system since host computers possess local storage areas and the storage subsystem along with the SOD center represent the remote storage system), and wherein said remote storage system determines if it is possible to provide said remote storage area can be provided in accordance with said size and speed (it is determined if the selected storage subsystem can meet the SOD demand, Col. 13, lines 3-20), and if it is possible, sends a data packet from the remote storage system to the storage system, said data packet identifying a remote unit ID of the remote storage area that is to be stored in a port management table of the storage system in accordance with the port ID identified in the

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utilization demand message (...thereupon updates the device management table and I/O port management table and send a management result responsive to the demand for storage resources, Col. 2, lines 41-60. Additionally, the I/O port management tables include a port ID, status information, and device number information, see Col. 10, lines 41-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Shoroff in view of Blumenau since doing so allows the remote system to properly assign additional storage space to the storage system that meets the system's space and speed demands while also properly directing the storage system to the port location of the additional space that is remotely located, thus enabling the mounting of the such storage space.

Shoroff in view of Blumenau in view of Kagami does not teach operating the storage system by detecting the amount of free space. Instead, Shoroff in view of Blumenau in view of Kagami discloses operating the storage system by determining if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. Igami et al. discloses a detection section 107 that detects the free space of a memory buffer 106. Then, the system determines if the remaining space is large enough (Col. 6, lines 30-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Shoroff in view of Blumenau in view of Kagami to operate the storage system by detecting the amount of free space as done by Igami since Shoroff already discloses the need to determine if a particular file fits in the available memory and Igami's method of making the determination (by detecting the free space) is a straight forward way of making such a determination.

Claim 11 is rejected using the same rationale as that of Claim 10 wherein the combination detects that a remaining amount of its own storage area has become less than a predetermined value by determining if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45). Shoroff and Igami disclose monitoring a utilization state of said additional (both remote and non remote) storage area for said storage system (Shoroff Column 10, lines 45-54; Igami Col. 6, lines 30-55). Shoroff discloses determining whether or not said storage area in said storage system is to be increased is according to said utilization state. Shoroff determines if the processed data fits in the remaining space of the target file. Such a determination requires the monitoring of the used capacity of the target file as well as monitoring of the space available in the remote storage ("utilization state"). Referring to Figure 12, step 206 reads the used capacity of the target file, calculates how much empty space is remaining in the target file and then determines if the processed data fits into the target file. In step 208 a calculation is made as to how much of the remote storage is needed to fit the processed data in the target file and such storage amount is used to increase the target file (decide whether or not one or more spare disk units is to be used).

Claim 12 is rejected using the same rationale as that of Claim 10 wherein allowing the system of Shoroff to seek additional storage space from remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. Blumenau also discloses the local storage system (host) accessing the remote storage system for the purposes of memory expansion via an associated identifier allowing access to the remote

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volume as a regular volume of data storage (Column 19, lines 20-35). Since the remote storage volume can be accessed as a local storage volume through the identifier, it has basically become part of the local storage system, in doing so, the data that is stored in the remote storage volume has essentially been “copied” over to be part of the local storage system. In combining the inventions of Shoroff with that of Blumenau, the resulting invention performs the remote storage access as done by Blumenau and therefore essentially “copies” the data in the remote storage system over to be part of the local storage system.

Claim 21 is rejected using the same rationale as that of Claim 10.

Claim 22 is rejected using the same rationale as that of Claim 12.

Claims 23-25 are rejected using the same rationale as that of Claim 21 wherein the unit id is referred to as a disk identifier by Blumenau and Kagami discloses the use of port IDs for the association of the additional storage space.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Rojas whose telephone number is (571) 272-4207. The examiner can normally be reached on M-F 5:30am - 4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Midys Rojas
Examiner
Art Unit 2185

MR.


SANJIV SHAH
SUPERVISORY PATENT EXAMINER
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